CLAIMS

1. A cathodoluminescent mosaic screen on a light-transparent substrate that (screen) contains light-emitting, light-guiding, dielectric, and electroconductive light-absorbing components **wherein** the light-emitting components of the screen are implemented as light-guiding single-crystalline columns, whose diameter-to-height ratio ranges from 1:1 to 1:100, one butt-end of the columns being fixed to an inner surface of the substrate, a ratio of an area of the substrate, coated by the columns, to the total area of the substrate ranging from 10:1 to 1:10, whereas remaining part of the substrate and of all the volume of the structure is filled by an electroconductive non-light-emitting medium that has a coefficient of light absorption in respect to the emitting light more 20 %.

2. The screen according to the claim 1 **wherein** the surface of the columns is coated by mirror reflecting metallic layer.

3. The screen according to the claim1 **wherein** outer butt-ends of the columns are coated by a light-emitting luminescent layer whose thickness is smaller than height of the columns for at least an order of magnitude.

4. The screen according to the claim 3 **wherein** the luminescent layer is epitaxial in respect to the columns.

5. A method for preparation of luminescent screens consisting of single-crystalline columns on substrates by vapor deposition of luminescent material **wherein** an intermediate substance forming a liquid phase at the crystallization temperature, other than the luminescent material, is firstly deposited on the substrate and, then, the luminescent material is deposited on such a substrate.

6. The method according to the claim 5 **wherein** the thickness of the intermediate substance is more than 10 nanometers and smaller than 1 micrometer.

7. The method according to the claim 5 **wherein** the liquid phase is formed at a contact interaction of the intermediate substance with the substrate.

8. The method according to any of claims 5 or 6 **wherein** the intermediate substance is formed by more than one chemical elements.

9. The method according to the claim 8 **wherein** at least one of the chemical element is operating as a luminescent activator or co-activator.

10. The method according to the claim 5 **wherein** a microrelief of inhomogenities in structure and/or in chemical composition is created on the substrate.

11. The method according to the claim 10 **wherein** the inhomogenities are of a regular character.

12. The method according to the claim 11 **wherein** the inhomogenities have crystallographically-symmetric character.

13. The method according to the claim of any of the claims 5 or 9 **wherein** the activator or co-activator is introduced into the luminescent material by means of ion implantation.

14. The method according to the claim 13 **wherein** the luminescent material is coated by a thin layer of a material transparent for passing through it of electrons.

15. The method according to the claim 14 **wherein** diamond or diamond-like material serve as the transparent material.